

REMARKS

Reconsideration is respectfully requested of the above identified application in view of the amendments above and remarks following.

Claims 1-42 are pending in this application. Claims 21-26, 32-35, 41 and 42 have been withdrawn. Claims 1, 2, 6, 9, 12, 20, 23, 28, 32, 33, and 35 have been amended. Claim 1 has been amended to insert "bonded to M" twice. Support is found in the formula on page 2 in the Summary section. Claims 1, 2, 9, 28, and 35 have been amended to insert claim 11 (as originally filed). Support is found in originally filed claim 11.

Claims 9, 32, and 33 are amended to insert a specific set of bridging groups. Support is found in originally filed claim 2.

Claims 6, 20, 23, and 35 are amended to correct typographical errors.

Claim 12 has been amended to reinsert "chloride, bromide, and iodide" and is supported by originally filed claim 12.

Claims 11, 14 and 27 have been cancelled.

Restriction Requirement / Rejoinder

Furthermore, Applicant notes that certain claims have been withdrawn due to a restriction requirement. Applicant requests rejoinder of the withdrawn claims upon any future indication of allowability.

Rejections Under 35 U.S.C. § 112 Second Paragraph

Claims 11, and 12 stand rejected under 35 U.S.C. § 112 Second Paragraph for having X ligands that are broader than claim 2. Applicant has cancelled claim 11 and amended the text of claim 11 into claim 2. Claim 12 was dependent on claim 11. Claim 12 is has been amended to be dependent on claim 2. Withdrawal of the rejection is requested.

Claim Rejections Under 35 U.S.C. § 103 (a)

Claims 1-20, 27-31 and 36-39 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Sumi (US 6,323,353) in view of Baardman (US 5,658,982) in further view of Qian (*Synthesis and Polymerization behavior of Various Substituted*

Half-Sandwich Titanium Complexes Cp'TiCl₂(OR) as Catalysts for Syndiotactic Polystyrene*, J. Mol. Cat. 208, 2004, 45-54.). The Examiner deems that the use of an activator would be obvious.

Claims 1-20, 27-31 and 36-39 have been rejected under 35 U.S.C. § 103 (a) as being unpatentable over Buchwald in view of Baardman in further view of Qian (*Synthesis and Polymerization behavior of Various Substituted Half-Sandwich Titanium Complexes Cp'TiCl₂(OR*) as Catalysts for Syndiotactic Polystyrene*, J. Mol. Cat. 208, 2004, 45-54.). The Examiner deems that the use of an activator would be obvious.

Claims 1-20, 27-31 and 36-39 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Zhang in view of Baardman (US 5,658,982) in further view of Qian (*Synthesis and Polymerization behavior of Various Substituted Half-Sandwich Titanium Complexes Cp'TiCl₂(OR*) as Catalysts for Syndiotactic Polystyrene*, J. Mol. Cat. 208, 2004, 45-54.). The Examiner deems that the use of an activator would be obvious.

Claim 40 has been rejected under 35 U.S.C. § 103(a) as being unpatentable over any of Sumi, Buchwald, or Zhang in view of Baardman (US 5,658,982) in further view of Piekarski (US 3,991,259).

With regard to Sumi, Buchwald, and Zhang each in view of Baardman in further view of Qian, the Examiner admits that activators are not present in the primary references of Sumi, Buchwald, and Zhang but then suggests that the use of an activator would be obvious from Baardman in further view of Qian. Applicant disagrees on grounds that it has long been established that ... "*The effect of a modification of one prior art catalytic process in a manner employed in another prior art process which employs a different catalyst is unpredictable.*" Ex parte Berger et al., (POBA 1952) 108 USPQ 236. Just because a chemical component works in one catalyst system, does not mean it will automatically work in another. Furthermore, in KSR International co. vs Teleflex, Inc. (550 US. (2007), Slip opinion No. 04-1350) the US Supreme Court recognized that "*a patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art. ... This is so because inventions in most, if not all, instances rely upon building blocks long since uncovered, and claimed discoveries almost of*

necessity will be combinations of what in some sense, is already known. " (Slip opinion, page 15). Thus it is clear that using Applicant's specification as a map to cobble together something that appears to be Applicant's invention is not sufficient under 35 USC § 103 to prove obviousness.

Applicant respectfully submits that this is what is happening here. Sumi discloses ligand-metal complexes useful as a catalyst in asymmetric synthesis, such as asymmetric carbon-carbon bond formation and asymmetric hydrogenation (Column 3, line 48-50). Zhang discloses ligand metal complexes for use in asymmetric catalysis (such as reducing imines to amines (see abstract line 5-6). Buchwald discloses ligand-metal complexes and methods to use them in reactions such as Suzuki coupling, amination, diaryl ether synthesis, ketone arylation and Heck reactions (Buchwald Figure 1, column 1, line 65- to column 2, line 1). Sumi, Zhang and Buchwald are for use in small molecule synthesis and do not relate to olefin oligomerizations/polymerizations and catalyst systems for such. This is an important distinction because as a general rule small molecule catalysts change a single molecule in some way (add an amine, hydrogenate it, arylate it, etc) whereas oligomerization/polymerization catalysts take multiple molecules and string them together into chains with multimeric repeat units (typically on the order of 10's to 1000's or even 10,000's of units or more). This is a fundamentally different way of performing chemistry. One of ordinary skill in the oligomerization or polymerization art would not look to small molecule synthetic catalysts for oligomerization/polymerization catalyst systems. It is only with hindsight reconstruction that one would find Baardman and combine it with Sumi, Zhang or Buchwald. Baardman does not disclose a catalyst compound comprising *both* N and P as required in Applicant's claims and in fact discloses a system that would poison the instant invention. Baardman's polymerization is advantageously performed in the presence of a "protic" compound. (column 5, line 11-12) Diluents useful in Baardman's polymerization include ketones (acetone), protic solvents...methanol, ethanol, etc" (Column 5, line 61-67). The protic compounds and useful diluents are all poisons in Applicant's system. Thus it is highly unlikely that one of ordinary skill in the art would look to a poisonous system to find an activator. Thus, the combination each of the three primary references with *all* that Baardman discloses (not just the portion the Examiner selects) would not automatically produce a functional catalyst system. As

evidence to support these statements, please see the declaration of Dr. Jo Ann Canich attached hereto.

Furthermore the addition of Qian does not solve this problem. Qian is directed to group 4 metal compounds used to make polyolefins. Applicant's invention is directed to group 8, 9, and 10 metals. One of ordinary skill in the art would not look to a Group 4 reference for Group 8, 9 and 10 guidance. Furthermore, the Examiner cites Qian for the premise that it is obvious to substitute a halogen for a hydrocarbyl ligand. Respectfully, this is broad overstatement that is simply not correct. First halogen ligands are polar and carry a different charge than hydrocarbyl ligands, such as methyl. Clearly they are not equivalent. Second, in many systems, a borate activator in combination with a halogenated catalyst precursor produces an inactive system while an alkylated precursor often, but not always, produces an active system. Thus, halogens and hydrocarbyls are not equivalent, particularly in borate activator containing systems. As evidence to support these statements, please see the declaration of Dr. Jo Ann Canich attached hereto.

Further, with respect to claim 40, Piekarski also does not solve the problem left by the combination of Sumi, Buchwald or Zhang with Baardman. First, Piekarski relates to group 4 and 5 metals (titanium and vanadium), where as Applicant's invention is directed to group 8, 9, and 10 metals. One of ordinary skill in the art would not look to a Group 4 or 5 reference for Group 8, 9 and 10 guidance. Likewise, just because a titanium or vanadium compound can be put on a support does not mean that a group 8, 9 or 10 compound can automatically be put on a support. Further it is also not automatic that catalyst activity is increased by putting a catalyst on a support. There are many systems where putting the catalyst on a support actually reduces "activity". Thus the Examiner's statement that "*the activity of many catalysts can be increased by depositing on them on a solid support*" is also a technically incorrect overstatement.

In light of the above, Applicant respectfully request that the rejections be withdrawn.

Examiner's Response to the Above Arguments.

The Examiner has responded to the above by making several conclusory statements that do not properly support a finding of obviousness (see MPEP § 2143 (pg 128 "rejections based on obviousness cannot be sustained with mere conclusory

statements"). Furthermore, the Examiner's statements purported to set out scientific "theories that hold true under most conditions." With regard to such theories, MPEP § 2144.02 states: *"The rationale under 35 USC § 103 may rely on logic and sound scientific principle (citations omitted). However, when an examiner relies on a scientific theory, evidentiary support for the existence and meaning of that theory must be provided."* (citations omitted)

Applicant respectfully request that the Examiner provide evidentiary support for the existence and meaning of the theories stated in the office action dated March 4, 2008, including but not limited to:

- 1) "catalysis follows one of several pathways;"
- 2) "common sense" can be used in the catalysis art;
- 3) While both hydrocarbyls and halogens will act differently in their tug of war for electrons with the metal center, these interactions are well understood and can and are used regularly to "tune" the activity of a particular metal system;"
- 4) they carry the same unit charge and substituting one for another does not change the oxidation state or electron count the metal center;
- 5) one could tune the activity to optimize through routine experimentation the electronic character of the metal center ...if it was desired to increase or decrease the electron density at he metal center;
- 9) Since neither halogen nor hydrocarbyl ligands are strong field ligands;
- 10) one would not expect any change in the orbital or geometric configuration;
- 11) a slight change in sigma donation that can be adjusted by going from methyl to secondary to tertiary hydrocarbyls to halogens and from F to I to finely tune the metals activity.

Further the Examiner states that Applicant provided no evidence that Baardman would poison the catalyst on the instant invention. In response to this statement, Applicant submits evidence supporting this statement and others above. A declaration explaining why one would not combine the references as the Examiner suggests and why the reaction medium would be poisoned by Baardman by Dr. Jo Ann Canich is attached hereto.

Further the Examiner suggests that Applicant is merely tuning the catalysts of Sumi, Buchwald, or Zhang in view of Baardman in further view of Qian or Piekarski.

Applicant respectfully disagrees. If this were so, then the "tuned" systems would make the small molecules better, faster or cheaper. It would not make a completely different molecule.

In light of the above Applicant respectfully requests that the rejections be withdrawn.

Double Patenting

Claims 1-20, 27-31 and 36-40 have been provisionally rejected under the judicially created doctrine of obvious type double patenting (ODP) over claims 2-6 and 9-17 of USSN 10/693,584, filed October 24, 2003. Applicant respectfully disagrees. First, Applicant notes that a similar rejection is made in USSN 10/693,584, over the instant application. Applicant further notes that, with regard to obviousness type double patenting rejections, if the applications have the same effective filing date (which 10/693,584 and the instant application do) according to MPEP § 804 I.B.1, *"the examiner should determine which application claims the base invention and which application claims the improvement (added limitations). The ODP rejection in the base application can be withdrawn without a terminal disclaimer."*

Applicant submits that the instant Application is the base application for purposes of MPEP § 804 I.B.1, and the OPD rejection in the instant application should be withdrawn.

In the event the Examiner does not withdraw the obviousness type double patenting rejection, Applicant respectfully requests that the Examiner make the determination of which application is the "base" application and which application is the "improvement" application.

Applicant made this argument in the previous office action response and the Examiner has not responded to it. Applicant respectfully requests a response.

Information Disclosure Statement

Applicants also submit an Information Disclosure Statement containing references cited by Dr. Canich in her declaration.

Conclusion

Applicants have made an earnest effort to place their application in proper

form and to establish the patentability of their claimed invention over the applied prior art. WHEREFORE, reconsideration of this application, entry of the amendments, withdrawal of the art, rejoinder of the withdrawn claims, and allowance of the amended claims herein are all respectfully requested.

Please charge any deficiency in fees during the entire pendency of this application or credit any overpayments to Deposit Account No. 05-1712.

Any comments or questions concerning the application can be directed to the undersigned at the telephone number given below.

Respectfully submitted,

Date: July 7, 2008

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